The Persistence of Moderate Inflation in the Czech Republic and the Koruna Crisis of May 1997

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Abstract

Macroeconomic policy in the Czech Republic has been based on a fixed exchange rate for most of the post-1993 period and a conservative fiscal policy characterized by a government budget that was close to balance combined with a tight monetary policy that sought to maintain high interest rates and to restrict the growth of the money supply. Surprisingly, given the Czech Republic's good starting conditions for carrying out such a "soft landing" in its macroeconomic stabilization, the economy was hit by a speculative attack on the koruna in May, 1997, and the economy, which had shown some signs of an increasing tempo of growth, appears to have slid into recession. At the same time, inflation has proven to be, while moderate by regional standards, surprisingly resistant to dropping below 10% per annum, thus leaving the Czech Republic in an undesirable state of "stagflation", with output declining, unemployment rising, and inflation accelerating.

In this paper we argue that, although the fixed nominal exchange rate policy may have been retained for too long, and that, while the mix of monetary and fiscal policies was inappropriate given the desire for a fixed nominal exchange rate, the key problem for Czech policy both before and after the abandonment of a fixed exchange rate policy was and is the persistence of a rate of inflation that exceeds that of its major trading partners by a large margin. After explaining the relationship between Czech inflation, exchange rate and macroeconomic policies and the crisis of May, 1997, we examine some explanations for the persistence of inflation in the Czech Republic at a level around 10%. We close by examining the policy implications of our findings in the context of the Czech National Bank's new policy of inflation targeting.

JEL Classification: E5, F4, P5

Keywords: Currency crisis, inflation targeting, moderate inflation, transition economies.

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I. INTRODUCTION

Macroeconomic policy in the Czech Republic has been based on two pillars: a fixed exchange rate for most of the post-1993 period and a conservative fiscal policy characterized by a government budget that was close to balance combined with a tight monetary policy that sought to maintain high interest rates and to restrict the growth of the money supply. The Czechoslovak and, later, Czech, koruna was initially devalued well below what many thought its long-run equilibrium rate to be. In part, this over-devaluation reflected anxiety over the country's ability to successfully reorient its trade toward the West and in part it was to serve as a cushion to make the fixed exchange rate credible (Brada and Kutan, 1997). That is, it was assumed that, for some time after the beginning of the transition, Czech inflation would be higher than that in the Czech Republic's major trading partners. Consequently, over time, this inflation differential would lead to a gradual appreciation of the real effective exchange rate (see Figure 1), an appreciation that would be cushioned not by nominal devaluations but rather by gains in productivity and by the country's exporters' growing ability to sell their goods on the global market. A fixed nominal exchange rate maintained under such circumstances could both serve as a nominal anchor and establish foreign investors' confidence in the koruna, thus encouraging capital inflows into the Czech Republic. Simultaneously, conservative monetary and fiscal policies would serve to reduce gradually the domestic rate of inflation, so that real exchange rate appreciation would be modest, and, hopefully, when domestic inflation rates approached those in the two countries, the Federal Republic of Germany and the United States, to whose currencies the koruna was pegged, real appreciation would have led to a nominal rate that was roughly consistent with external equilibrium.

Surprisingly, given the Czech Republic's good starting conditions for carrying out such a "soft landing" in its macroeconomic stabilization, the economy was hit by a speculative attack on the koruna in May, 1997, and the economy, which had shown some signs of an increasing tempo of growth, appears to have slid into recession.[1] At the same time, inflation has proven to be, while moderate by regional standards, surprisingly resistant to dropping below 10% per annum, thus leaving the Czech Republic in an undesirable state of "stagflation" (Table 1), with output declining, unemployment rising, and inflation accelerating.

In this paper we argue that, although the fixed nominal exchange rate policy may have been retained for too long, and that, while the mix of monetary and fiscal policies was inappropriate given the desire for a fixed nominal exchange rate, the key problem for Czech policy both before and after the abandonment of a fixed exchange rate policy was and is the persistence of a rate of inflation that exceeds that of its major trading partners by a large margin. After explaining the relationship between Czech inflation, exchange rate and macroeconomic policies and the crisis of May, 1997, we examine some explanations for the persistence of inflation in the Czech Republic at a level around 10%. We close by examining the policy implications of our findings in the context of the Czech National Bank's new policy of inflation targeting.

II. INFLATION AND THE EXCHANGE RATE: THE POLICY DILEMMAS OF ORTHODOXY

As Table 1 shows, the Czech Republic followed what appeared to be a conservative fiscal policy, although with some increase of the government deficit over time.[2] Simultaneously, the money supply grew more slowly than nominal GDP (Table 2), showing that monetary policy, too, was aimed at reducing inflation. At the same time, the low growth of the money supply in a period of increasing monetization on the economy tended to create something of a credit crunch, with

interest rates rising from 1994 onward so that the average rate on new credits ranged from 13 to over 16 percent and the three month PRIBOR from 10 to 16 percent (Table 3).

The peg of the koruna at such an undervalued rate, combined with these high interest rates provided a highly profitable opportunity for foreign investors. They could invest at high Czech interest rates with little or no exchange risk, particularly as the peg allowed deviations from the central rate of only 0.5 percent. This almost riskless opportunity increased in attractiveness over time as the credit-worthiness of the Czech Republic improved (Table 4). The interest-rate differential between the Czech Republic and Germany was quite large and persistent through 1996, as Table 5 shows.

The upshot of this situation was that short-term capital inflows accelerated after 1994 (Table 6). Some of these short-term inflows represented loans to Czech firms, who preferred such credits to paying higher domestic rates, but much of the short-term inflows as well as some of the long-term investment were motivated by foreign investors' desire to take advantage of the relatively riskless interest rate differential.

The Czech National Bank had relatively little room for maneuver. So long as inflation persisted around 10%, it had to maintain a tight monetary policy, including positive real borrowing, if not deposit, rates. If it were to allow the short-term capital inflows to affect the money supply, it feared that the resulting expansion of M2 would put to an end any hopes of lowering inflation, and thus lead to excessive real exchange rate appreciation that might force a nominal devaluation. Unless fiscal policy could be made more restrictive, the Bank had to engage in massive sterilization, with a resultant expansion of international reserves. However, so long as inflation, and thus nominal interest rates, could not be brought down to West European levels, the Bank had no means of escaping from this policy cul-de-sac.

The untenable position of the Bank is evident from Figure 1, which shows the evolution of the real effective exchange rate and the trade balance, and from Table 6. The Bank had to

maintain a tight policy in order to try to halt inflation, but in the process it encouraged capital inflows, even as the real appreciation of the koruna and a growing current account deficit were starting to make investors nervous that a nominal devaluation would be necessary.

A.. Widening the Fluctuation Bands of the Koruna

The Bank inadvertently, or perhaps, more accurately, intentionally, contributed to investors' unease by widening the band within which the koruna could fluctuate from ± 0.5% to ± 7.5% on February 28, 1996. This was an effort to introduce a measure of exchange rate uncertainty for foreign investors, and it was the outcome of a policy debate within the CNB and within the government that dated back at least to early 1994. The problems being caused by large inflows of short term capital had been of concern to policy makers, and a variety of measures, including capital controls, taxes on capital flows, and devaluation or revaluation of the koruna, had all been considered as possible ways of reducing capital flows. However, most participants in these debates sought measures that would reduce short-term capital inflows without harming the country's reputation with international bankers and without any seeming backsliding from the liberal international trade and payments system that had been created in the Czech Republic. The freeing of controls over capital outflows on October 1, 1995, which effectively made the koruna fully convertible, was an early outcome of this policy debate, but the amount of money that Czech citizens may have wanted to deposit overseas was trivial, certainly when compared to the massive short-term capital inflows into the Czech Republic.

By 1996, the value of the widening of the fluctuation band or the koruna was questionable. Perhaps increasing uncertainty and reducing short-term capital inflows would have been beneficial in 1994 or 1995, although at that stage the result might have been nominal appreciation rather than depreciation. In 1996, the result was not merely a slow-down in capital inflows, but also a significant outflow of short-term investments. Moreover, either the CNB or Czech economic policy in general seems to have subverted the objective of the widening of the

bands by preventing the koruna from moving very widely within its new bands, particularly in a downward direction, when the measure was first introduced (see Figure 2).

The widening of the fluctuation band of the koruna was announced on February 28, 1996. Within three hours of the announcement, the koruna had fallen by about 2.5% on the interbank market as foreign investors sold koruny for foreign exchange or entered into contracts to do so in the future to protect their investments in the country against exchange rate risk. The downward slide was arrested by the selling of foreign exchange by Czech exporters, who sought to capitalize on the depreciation of the koruna and through the intervention of the CNB, which used its dollar holdings to purchase 2.5 billion koruny on the afternoon of the 28th. (Jílek and Jílková, 1998, pp. 72-73). The CNB continued to support the koruna in the next three days through further interventions and through the regular foreign exchange fixings, expending about 17.9 billion koruny ($663 million). In the following week, the Bank repurchased about 1.3 billion koruny in foreign exchange, thus ending with a reduction in short-term investments in the country of 16.6 billion koruny ($615 million).

While the IMF (1997, p.47) viewed this maneuver rather favorably, arguing that it provided monetary policy greater autonomy in that, with less enthusiasm on the part of foreign investors to place short term capital in the Czech Republic, the Bank could pursue its policy of tight money without the burden of having to sterilize large capital inflows. However, as soon as the CNB used its greater autonomy and raised interest rates, the koruna promptly began to appreciate and short-term capital to return to the country, especially in view of the fact that the koruna was appreciating rather than depreciating. Noteworthy in this scenario is the swing toward a mildly expansionary stance of fiscal policy (Table 1) over this period. Clearly, with an appreciating real exchange rate, maintaining external and internal equilibrium required a tightening of both monetary and fiscal policy. Because fiscal policy was not used, this placed the

entire burden of adjustment on monetary policy, but an effective monetary policy required higher interest rates and restrictions on credit emission, which would only serve to exacerbate the problem of short-term capital inflows, increasing the country's vulnerability to speculative attack.

B. The Speculative Attack on the Koruna

In early 1997, a number of events combined to bring just such a speculative attack about. Exogenous factors included the crisis in Asia and consequent investor nervousness about all emerging economies. The unraveling of the government of Prime Minister Václav Klaus both increased political uncertainty and made it difficult for the government to adjust fiscal policy appropriately and to ensure that necessary reforms, particularly in the banking sector would be carried through . The Klaus government was rocked by a series of scandals and defections that sharply reduced both its popularity and its ability to make tough decisions. Consequently, when the need to defend the koruna by means of a tighter fiscal policy became evident, the government proved unable to act decisively or effectively. On April 16, 1997, it adopted a series of measures, the so-called "small package", which called for cuts of 25.5 billion koruny in budgetary outlays; controls over the growth of wages in the state sector; acceleration and strengthening of reforms; and the introduction of a 20% deposit on imports of consumer goods. These measures, in the words of the Czech National Bank (1997, p.1), "....were found insufficient by investors".

The growing political uncertainty in the Czech Republic and the nervousness caused by the Asian crisis caused foreign investors to reevaluate the Czech Republic's fundamentals. As Figure 1 shows, the real exchange rate had been appreciating and the trade deficit had been growing, financed largely by inflows of foreign capital. There was some concern that, in real terms, the koruna was overvalued. Although this would not seem to be the case (see Halpern and Wyplosz (1997) and Brada(1998)) , government reports that exports had not grown in the first quarter of 1997 may have persuaded investors otherwise and led them to believe that the trade

deficit would continue to grow beyond its then level of over 8.2% of GDP. Bad results on the trade front were reinforced by the publication of data showing a decline of 3.5% in industrial output in the first quarter of 1997, the culmination of a deceleration in this sector that had begun in mid-1996 .

There were also elements of a speculative bubble in the korunas' exchange rate movements after the widening of the fluctuation bands. Perhaps because the CNB had intervened so vigorously to avoid a devaluation when the bands were widened, investor perception of exchange rate risk seems to have remained low for the remainder of 1996, and with higher interest rates in the Czech Republic, the koruna began to appreciate (see Figure 2) so that by February 1997 it was 5.5% above its central parity. It was about this time that foreign investors' concerns began to manifest themselves, and capital inflows dried up although the fall in the koruna's value was rather gradual and modest so that, at the end of April, 1997, it was only about 2.5% below its central rate. . By early May, 1997, the unraveling of the government and unfavorable economic news industrial triggered a speculative attack on the koruna that was characterized by large sales of koruny by foreign banks on May 13 and 14. These sales pushed the kuruna's exchange rate toward the lower intervention point.

At first, the Czech National Bank sought to defend the koruna. Starting on May 15, 1997 it began to intervene on the foreign exchange market, expending nearly $2.5 billion in reserves during the entire episode, which lasted less than two weeks. Interest rates were raised. The 3 month PRIBOR reached 35%, and the Lombard rate rose from 14% to 50%. The Bank also used administrative measures to limit foreigners' access to koruny by prohibiting local banks from lending koruny to foreigners.

These measures proved insufficient in the face of continuing bad news about the economy and the growing inevitability of the collapse of the Klaus government. Amidst evidence that residents were also losing faith in the koruna, on May 26 the Bank announced the

end of the fluctuating band regime for the koruna. On May 27, the koruna fell by approximately 12% on the foreign exchange markets, and this seemed sufficient to quell further speculation. The following day, the government announced a new package of fiscal measures, whose main effect was to double the spending cuts proposed in the earlier "small package" of reforms.

This relatively tranquil dénouement suggests that, as Begg (1998) argues, the fundamentals for the Czech Republic were not as catastrophic as some observers had thought. The koruna rather quickly recovered about half of the decline it had suffered during the crisis although the foreign exchange market remained rather nervous for the remainder of 1997.

C. Macroeconomic Consequences of the Crisis

While the Czech Republic weathered its currency crisis much better than did most other emerging economies, with the worst damage being a $2 billion loss of foreign exchange reserves, the crisis failed to resolve all of the fundamental problems afflicting the country's macroeconomic and foreign exchange policies. In part, this is due to the fact that the koruna rather quickly regained much of its strength, and as Figure 2 shows, its nominal rate in mid-1998 was about the same as it had been in 1995-1996. Given the approximately 10% per year inflation in the intervening period, the koruna's real appreciation appears to be continuing, with the 1997 crisis doing little to alter the long-term dynamics of this process.

Nevertheless, there were some positive outcomes from the crisis. The first of these is an unexpected, given exchange rate movements, dynamism in exports. As Table 7 shows, exports have grown through the first half of 1998 despite the continuing real appreciation of the koruna. More understandable was the slowdown in imports, which can be attributed to both greater fiscal restraint (see Table 8) and its consequences and to an improvement in Czech terms of trade caused mainly by falling import prices. The latter should also have helped reduce domestic inflation because the declines occurred mainly in the prices of energy and raw materials, so that

these price decreases should have spread throughout the economy in the form of falling production costs.

Second, macroeconomic policy finally began to have some effect on aggregate demand. As Table 8 shows, while industrial production continues to grow in real terms, construction has been hard hit by the high interest rates. Another positive outcome is that real wages, and, indeed, household incomes, began to fall, thus helping to offset some of the effects of real appreciation on the competitiveness of Czech exports and also helping to reduce inflationary pressures.

Nevertheless, there have also been negative consequences as well. The data for early 1998 in Tables 1, 6 and 8 show that economic growth has halted, inflation has increased and short-term capital inflows have resumed, fueled by interest rates that are two to three percentage points higher than they were before the crisis struck (Table 3). These high interest rates reflect in part the need to adjust nominal interest rates to the higher levels of inflation that followed the crisis (Table 1) but the also reflect the fact that, without a significant nominal depreciation of the koruna, tight monetary policy is required to maintain external and internal balance. In this sense, there has been no change in Czech macroeconomic policy. Moreover, as the data in Figure 2 suggest, the koruna is appreciating again, likely in response to the interest rate differential between the Czech Republic and western countries, which is now greater than it was before the crisis. In sum, the net result of the crisis is that the Czech Republic and its central bank are caught in the same policy trap that existed before the crisis. The nominal devaluation of the koruna has been relatively minor, but interest rates are higher than before. With the same exchange rate, the trade deficit is likely to remain intractable in the long run. Unless fiscal policy is overhauled to generate a much larger surplus, a possibility that is unthinkable given the current political situation, then the only possibility for avoiding a similar, and perhaps even more debilitating, speculative attack on the koruna is to see a significant decline in the rate of inflation. Here the surprise of Czech inflation continues. Despite falling real wages and falling prices of

imported industrial inputs and of energy and raw materials, inflation has accelerated in the aftermath of the crisis (Table 1).

III. INFLATION IN THE CZECH REPUBLIC: CAUSES AND CURES

Given the fiscal and monetary policies followed in the Czech Republic, the persistence of "sub-moderate" inflation in the neighborhood of 10% is rather puzzling, and a number of explanations have been put forward. Among the more prominent are the following:

A. *Undervaluation of the Koruna.* Some observer such as Desai (1998) and Richards and Tersmann (1996), argue that inflation in some transition economies is the result of the initial depreciation of their currencies. This inflation is not the outcome of the usual wage-price spiral induced by devaluation, but, rather, it is the result of the workings of the law of one price, or commodity arbitrage, which creates domestic inflation to as to reestablish purchasing power parity. While this argument seems plausible in that higher prices of tradables should in some way lead to a general price increase, the exact mechanism has yet to be spelled out by the proponents of this theory. Moreover, any plausible model of tradable-led inflation would have to imply that the prices of tradables would be significantly higher than the prices of nontradables and that this wedge would persist for some time if it was to drive an inflationary spiral. However, tradeables' prices in the Czech Republic rose only modestly faster than those of nontradables after the devaluation of the koruna, and non-tradables prices closed the gap relatively quickly thereafter. Moreover, the law of one price, while plausible from a theoretical standpoint suffers from the fact that deviations from purchasing power parity in the post-Bretton Woods period have been large and persistent for many countries(Rogoff, 1996)

B. *Inflation Is the Result of Relative Price Changes.* A characteristic of transition economies is that their relative prices were badly distorted. Given the downward stickiness of prices, the bulk

of price readjustment in the course of transition thus occurs as some prices increase by large amounts and others either remain constant or increase by relatively smaller amounts.

Pujol and Griffiths (1998) find that sectoral price changes in Poland during 1989-1995 were, indeed, quite skewed, suggesting that, in each period, some sectors were experiencing relatively large price changes while the prices of other sectors were closely bunched. Moreover, the standard deviation of sectoral price changes around the mean was quite large, and this high standard deviation did not decline much over their sample period. While the authors are able to correlate skewness and dispersion of sectoral price changes with inflation, the issue of causality remains open. Coorey *et al.*. (1998) find that the variance of relative prices does have a significant impact on the rate of inflation in 21 transition economies. For the period following the initial period of price liberalization in Central European countries, when there was a burst of inflation and a period of large relative price changes, neither the variance nor the skewness of sectoral price changes appear to have had a significant impact on the rate of inflation, suggesting that perhaps it is this initial burst of inflation and relative price realignment that drives the results obtained by Pujol and Griffiths .

Given the mixed results available on the effects of price variability on inflation in transition economies, it would seem to be somewhat of a heroic leap to conclude that such price variability is, indeed, the cause of persistent inflation in the Czech Republic. A considerable period of time has passed since the initial liberalization of prices, and the available evidence on price movements in the Czech Republic suggests that there is much less relative price change occurring now than there was in the early transition.

C. *The Freeing of Controlled Prices*. A variety of prices, mostly having to do with government and municipal services, utilities and rents, were not fully liberalized in the Czech Republic during the price liberalizations of 1991 and 1992. Rather, the government adopted a program of phased liberalization. In some cases, controlled prices were to be increased in an ad hoc manner

until they reached equilibrium, and then prices could be decontrolled. In other cases, increases were based on a formula whereby prices would increase by a factor equal to the previous years' inflation plus some pre-specified percentage, so that they would outpace inflation but by only a limited amount and thus move toward equilibrium at a controlled pace. Many municipal services were to be priced on a cost-plus basis (see Czech National Bank, 1998a, Table 3b). These goods account for about 22% of the consumer price index (CPI).

The argument for such a price setting patters leading to a persistence of inflation is that having a part of the consumer price index basket contain goods whose prices would necessarily grow at rates that exceed the past inflation rate would make it extremely difficult to reduce inflation quickly because the burden of slowing price growth below the rates of past inflation would thus fall on those goods in the consumer price index whose prices were not set in this way. Moreover, as prices of controlled goods are freed up, large on-time increases move the CPI upward in a way that may disguise the broader tendencies in prices.

In December 1997, as part of the complete overhaul of its approach to monetary policy, the CNB adopted this view of the problems of reducing inflation and adopted a new measure of inflation called net inflation (Czech National Bank, 1998a) . Net inflation represents the movements of unregulated prices only, further adjusted for the effects of indirect taxes and the elimination of subsidies. The Bank also uses another index, the adjusted inflation index, which excludes food prices so as to provide an even more stable measure of inflation.

According to the Czech National Bank's own data, this argument would seem to be only partially correct as an explanation for the persistence of inflation in the Czech Republic. . Regulated prices account for less than 20 percent of the CPI basket, and, through the end of 1995, increases in the prices of regulated goods played only a small part in overall inflation. In the second half of 1997 and the beginning of 1998, prices of regulated goods increased sharply, and thus price increases in this category of goods did account for about one-half of the increase

in the CPI in some months. Nevertheless, even in this period, inflation of other goods, especially of non-regulated services, also increased, and the CPI based on non-regulated goods, which had moved within a range of 4.6% to 8.2% on a monthly basis in 1996 and 1997 accelerated to nearly 8% in early 1998 (Czech National Bank, 1998b). Consequently, if we assume that regulated prices would increase at rates no faster than those of non-regulated goods, Czech inflation would certainly have been lower, but not markedly so. Moreover, when one examines the CPI on a disaggregated basis, then it becomes evident that non-regulated services, which are also non-tradables, have seen their prices increase at much faster rates than the prices of tradables in the CPI. Thus, if we assume that regulated services' prices were to increase at the same rate as other non-tradables, then the Czech inflation record would again worsen.

D. *Wage-Push Inflation*. Nominal wages in the Czech Republic (Figure 3) have grown more rapidly than has the CPI, so that real wages grew by in excess of 6 percent per year in 1995-1997. Productivity gains were much lower, ranging from 5 to 1 percent over this period. Some observers argue that this is the result of poor corporate governance in Czech firms. This argument is rather too facile, as there are examples of many other countries with different forms of corporate governance where real wages have increased rapidly also. Moreover, labor market conditions in the Czech Republic have been tight, largely because of the boom in services, especially those connected with banking and with tourism. Nevertheless, real wage creep does have to be considered a potential source of inflation.

E. *Foreign Trade Prices*. Tradables account for 67.2% of the CPI, and eliminating 20% of the regulated goods, which are all non-tradables, means that 86% of the net inflation measure is based on the prices of tradables. Thus, given the stability of the koruna and its recovery after the May 1997 crisis, it is somewhat surprising that Czech price increases can continue to outpace foreign inflation adjusted for the koruna's depreciation. Indeed, if one separates tradables and non-tradables in the CPI or in net inflation, then it is quite evident that the foreign trade sector

has had an important moderating influence on inflation in the Czech Republic (see, for example, Czech National Bank, 1998b Table 4). Thus, for the prices that are subject to domestic policy rather than endogenous, the Czech record of inflation is much worse that the CPI and net inflation suggest.

In sum, the persistence of inflation in the Czech Republic is rather difficult to explain. While a shift in focus toward net inflation makes the "official" level of inflation lower, a closer look reveals that much of the remaining sources of inflation are domestic in origin. Moreover, while it is true that net inflation, by netting out increases in regulated prices that are beyond the control of the monetary authorities, does eliminate some arbitrary and exogenous causes of inflation , the economic relevance of net inflation is unclear. Consumers react not to net inflation, but rather to all inflation that affects their spending power . The value of the koruna depends on its ability to command goods; not just unregulated goods, but all goods in the economy. Nominal interest rates must reflect total inflation, not just the increases in the prices of some goods. Thus, while net inflation may, arguably, give a more precise indication of how well the CNB is doing, its relevance for real economic processes should not be overestimated.

IV. INFLATION TARGETING IN THE CZECH REPUBLIC

With the abandonment of a fixed exchange rate, the CNB had to redefine its policy objectives because the koruna would no longer serve as a nominal anchor and policy target. Because of this, the Bank's principal policy instrument, control over the money supply, also became irrelevant. Consequently, the Bank turned to a policy of inflation targeting. The new policy was announced in a press release on December 22, 1997. The concept of net inflation discussed above is a key component of the new policy because all inflation targets are set in terms of net inflation. The Bank set two targets, a "control" target of 5.5-6.5% at the end of 1998 and a three–year target of 3.5-5.5% by the end of 2000 (Czech National Bank, 1998a) .

The Bank further stresses its continuing adherence to its obligation to maintain the stability of the koruna and to continue the process of disinflation in the Czech Republic and in fact to get inflation below 10%.

The Bank further stressed the advantages of inflation targeting over more traditional approaches to monetary policy, one of them being its greater transparency relative to policies that target either monetary aggregates or the exchange rate. In its adoption of inflation targeting, the CNB was in fact joining a number of central banks in developed market economies. Indeed, countries as diverse as Canada, the United Kingdom, Germany and New Zealand all are said to use inflation targeting (Mishkin and Posen, 1997) , although not all observers seem to agree on this point. In any case, the essence of monetary policy in countries following inflation targeting is to set inflation targets and then to pursue them without regard to output and employment (McDonough, 1997).

A key question for central banks that seek to implement inflation targeting is the relationship between inflation and the instruments such as the money supply, the interest rate and the exchange rate that the banks can deploy to control inflation. In the case of the CNB, this would seem to be a particularly crucial and problematic question. On the one hand, the Bank has argued that a stable relationship between monetary aggregates and the money supply cannot be found in the Czech Republic (Čihák and Holub, forthcoming). Interest rates are to some extent captive to the need to maintain sufficiently high lending rates to prop up the shaky Czech banking sector and, given capital inflows and the ability of Czech firms to borrow abroad, the effect of interest changes on inflation would seem to be relatively minor. Finally, while the exchange rate plays an important role because of the share of tradables in the net inflation index, exactly how the Bank can control the exchange rate, and especially whether the Bank should seek to reduce inflation by seeking a nominal appreciation of the koruna seems doubtful.

At the same time, the recent events cast considerable doubt on the Bank's, and the government's, commitment to inflation targeting. During the first part of 1998, inflation was sufficiently high to cast doubt on the bank's ability to meet its 1998 inflation target, one reason that the target was rechristened a "control target". However, as the economy slowed, and particularly as the koruna strengthened and as the price of imports fell, the inflation targets for the year became increasingly more attainable (Wall Street Journal, 1998). At the same time, unemployment has continued to grow to 6.8% in October and output has continued to decline, leading the government to criticize the Bank's policies for contributing to the recession. The Bank has responded with a series of interest rate cuts, the latest in mid-November bringing the repurchase rate to 11.5%, down 3.5 percentage points from its January highs of 15%. At the same time, the growth of the money supply has accelerated. Despite this, the koruna in mid-November stands at 17.8/DM, a significant appreciation over the beginning of the year.

A key question now is what the course of fiscal policy will be. The Zeman government has proposed an expansionary budget for 1999 to deal with the recession. It calls for as deficit of 31 billion koruny, which would represent a significant swing from the restrictive fiscal policy stance of 1998. At the best, the economy continues to be trapped in the dilemma of high inflation unaccompanied by an nominal depreciation of the koruna; at the worst, it may be headed for another crisis like that of May 1997, this time perhaps with more serious consequences. [3]

REFERENCES

Begg, David, "Pegging Out: Lessons from the Czech Foreign Exchange Crisis". *Journal of Comparative Economics,* Vol. 26, No. 4, December, 1998, forthcoming.

Brada, Josef C., "Introduction: Exchange Rates, Capital Flows, and Commercial Policies in Transition Economies". *Journal of Comparative Economics,* Vol. 26, No. 4, December, 1998, forthcoming.

Brada, Josef C., and Kutan, Ali M. , "The Czech Republic." In Padma Desai, ed., *Going Global: Transition to Market in the Word Economy.* Cambridge: M.I.T. Press, 1997, pp. 97-134.

Čihák, Martin, and Holub, Tamáš, "Inflation Targeting in the Czech Republic; Old Wine in New Bottles". *Eastern European Economics, forthcoming.*

Coorey, Sharmi, Mecagni, Mauro, and Offerdal, Erik, "Disinflation in Transition Economies: The Role of relative Price Adjustment". In Carlo Cottarelli and Gyorgy Szapary, eds., *Moderate Inflation: The Experience of Transition Economies.* Washington, D.C.: International Monetary Fund and National Bank of Hungary, 1998.

Czech National Bank, *Annual Report, 1997.*

Czech National Bank, *Inflation Report,* April, 1998a.

Czech National Bank, *Inflation Report,* July, 1998b

Desai, Padma, "Macroeconomic Fragility and Exchange Rate Vulnerability: A Cautionary Record of Transition Economies". *Journal of Comparative Economics,* Vol. 26, No. 4, December, 1998, forthcoming.

Drábek, Zdenek, Janáček, Kamil and Tůma, Zdenek, "Inflation in the Czech and Slovak Republics". *Journal of Comparative Economics,* Vol. 18, No. 2, April, 1994, pp.146-174.

Drabek, Zdenek, and Brada, Josef C., "Exchange Rate Regimes and the Stability of Trade Policy in Transition Economies". *Journal of Comparative Economics,* Vol. 26, No. 4, December, 1998, forthcoming.

Halpern, Laszlo, and Wyplosz, Charles, "Equilibrium Exchange Rates in Transition Economies". *IMF Staff Papers*, Vol. 44, No. 4, December, 1997, pp. 430-461.

International Monetary Fund, *Czech Republic: Selected Issues. IMF Staff Country Report No. 98/36.* Washington D.C.: International Monetary Fund, April, 1998.

Jílek, Josef and Jílková, Jiřina, "The Reaction of Residents and Nonresidents to the Widening of the Intervention Band of the Czech Koruna". *Eastern European Economics,* Vol. 36, No. 1 January-February, 1998, pp. 66-81.

McDonough, William R., "A Framework for the Pursuit of Price Stability". *Federal Reserve Bank of New York Policy Review*, Vol. 3, No. 3, August, 1997, pp. 1-8.

Mishkin, Frederic S., and Posen, A. S., "Inflation Targeting: Lessons from Four Countries". *Federal Reserve Bank of New York Policy Review*, Vol. 3, No. 3, August, 1997, pp. 9-110.

Pujol, Thierry, and Griffiths, Mark, "Moderate Inflation in Poland: A Real Story". In Carlo Cottarelli and Gyorgy Szapary, eds., *Moderate Inflation: The Experience of Transition Economies.* Washington, D.C.: International Monetary Fund and National Bank of Hungary, 1998.

Richards, Anthony J. and Tersman, Gunnar H. R., "Growth, Nontradables, and Price convergence in the Baltics". *Journal of Comparative Economics*, Vol. 23, No. 2, October, 1996, pp. 121-145.

Rogoff, Kenneth, "The Purchasing Power Parity Puzzle". *Journal of Economic Literature*, Vol. 34, No. 2, June, 1996, pp. 647-668.

The Wall Street Journal (European Edition), "Czech Interest Rate Cut Leaves Analysts Divided", November 13-14, 1998.

FOOTNOTES

[1] For a description of the relatively favorable situation of the Czech Republic, at least with regard to inflationary pressures, on the eve of reform, see Drabek *et al.* (1994).

2. Unseen in the Federal government's deficit are the increasing deficits of local and municipal governments.

3. International markets appear to be skeptical of these policies as well. Standard and Poor's lowered the Czech Republic's credit rating from A to A- in November, 1998.

Table 1: Czech Macroeconomic Indicators (1993-1998)

	1993	1994	1995	1996	1997	1998 QI	QII
Real GDP growth (%)	-0.9	2.7	6.4	3.9	1.0	-0.9	-2.4
CPI growth (%)	20.8	10.0	9.1	8.8	8.5	13.3	12.7
Current account/GDP (%)	0.0	-0.1	-2.7	-7.6	-6.1	-3.5	-----
Budget surplus/ GDP (%)	0.1	0.9	0.5	- 0.1	-1.0	-----	-----
Unemployment (%)	3.5	3.2	2.9	3.5	5.2	5.5	5.6
Nominal exchange rate (koruny/dm)	17.6	17.8	18.5	18.1	18.3	19.05	18.5

Sources: Komerční banka, *Economic Trends No. 17 (July, 1998)*, page 1. Czech National Bank, *Monthly Bulletin, 1998, No.4 and No.8.* Czech National Bank, *Zpráva a měnové výoji v České Republice za období Leden-Září, 1996, pp. 49-52.*

Note: Even though its value was fixed against a basket of the $ and dm, the koruna (end of period) fluctuates against the dm because of fluctuations in the $/dm exchange rate and the koruna's peg against a basket of dm & $, subsequently also because of the introduction of wider bands in 1996, and, finally, due to the abandonment of the peg in May, 1997.

Table 2: Growth of Nominal GDP and Money Supply, 1995-1998 (year-on-year, end of period stocks)

	GDP	M2
1995	17.4	19.8
1996	13.6	9.2
1997	9.7	10.1
1998 (Q1)	10.4[a]	7.7
1998 (Q2)	10.3[a]	7.5

Sources: Komerční banka, *Economic Trends No. 17 (July, 1998), page 26* and Czech National Bank, *Monthly Bulletin, 1998, No.4 and No. 8.*

Notes: a authors' estimate

TABLE 3

INTEREST RATES IN THE CZECH REPUBLIC (1993-1998)

	1993	1994	1995	1996	1997	1998QI	Q2
Interest Rate on New Credits							
koruny	14.94	12.28	13.24	13.42	16.18	15.87	15.95
Forex	-------	-------	-------	-------	5.33	5.74	5.56
PRIBOR (3 month)	13.15	9.14	10.95	12.02	16.00	16.01	15.61

Source: *Czech National Bank Bulletin*, 1997 No. 4, and 1998, No. 8.

TABLE 4

CREDIT RATINGS OF TRANSITION COUNTRIES, 1991-1997
(Rank among countries; numerical rating in parentheses)

Country	1991	1993	1995	1996	1997
Czech Republic	54	40 (66.20)	41	35	44 (71.23)
Hungary	35	44 (60.70)	44	44	45 (70.80)
Poland	80	80 (41.81)	72	55	48 (68.05)
Slovak Republic	54	64 (46.31)	51	49	61 (61.63)
Romania	65	74 (43.00)	64	61	74 (52.96)
Russia	108	138 (25.96)	142	85	78 (50.72)

Source: Euromoney, March 1994, 1995, September, 1996, December, 1997.

TABLE 5

INTEREST RATES AND EXCHANGE-RATE-ADJUSTED RETURNS IN THE CZECH REPUBLIC 1991 AND 1996

(percent)

	1991			1996		
Country	**Interest Rate**	**$ yield**	**DM yield**	**Interest Rate**	**$ yield**	**DM yield**
Czech Republic[a]	7.03	4.23	9.73	6.79	5.44	-0.36
	14.08	11.28	16.78	12.54	11.19	5.39
MEMO ITEM						
Germany[b]	6.27			2.83		

Notes: a – The top interest rate is the deposit rate, the bottom is the loan rate.
b – Deposit rate.

Sources:
German deposit rates are from International Monetary Fund, International Financial Statistics, CD-Rom, January 1998.
Exchange rates are from PlanEcon Reports, various issues.

TABLE 6
CZECH BALANCE OF PAYMENTS (1994-1998)
(CZK Billions)

	1994	1995	1996	1997	1998 (Q1)
Current Account	**-1.4**	**-36.3**	**-116.5**	**-100.1**	**-12.1**
(% of GNP)	**-0.1**	**-2.7**	**-8.2**		
Capital Account of which:	**97.0**	**218.3**	**116.6**	**34.3**	**24.1**
Direct Investment	21.6	67.0	37.7	40.5	7.7
Portfolio Investment	24.6	36.1	19.7	34.4	-0.5
Long-term Capital	31.9	89.4	84.4	12.9	-12.1
Short-term Capital	19.0	25.8	-25.2	-53.5	28.9

Sources: See Table 1

Table 7: Czech Exports, Imports and Trade Balance, 1997-1998

($ mil.)

	!997				1998	
	Q1	Q2	Q3	Q4	Q1	Q2
Exports	5291	5808	5472	6207	6266	6615
Imports	6649	6879	6280	7359	6707	7122
Balance	-1358	-1071	-808	-1152	-441	-507

Source: Czech National Bank, *Monthly Bulletin,* Nos. 7 and 8, 1998

Table 8: State Budget and Macroeconomic Aggregates 1997-1998

	1997				1998	
	I	**II**	**III**	**IV**	**I**	**II**
State Budget (bn. czk)	-8.5	-14.8	-10.2	-15.7	7.6	1.8
Growth of Real (in %):						
GDP	1.2	0.5	-0.1	2.2	-0.9	-2.4
Industrial output	-2.6	5.5	5.7	9.6	8.4	5.1
Construction	-5.6	1.3	-6.5	-5.3	4.2	-9.0
Average Wage	6.2	6.0	2.3	-1.5	-2.1	-5.1

Source: See Table 7

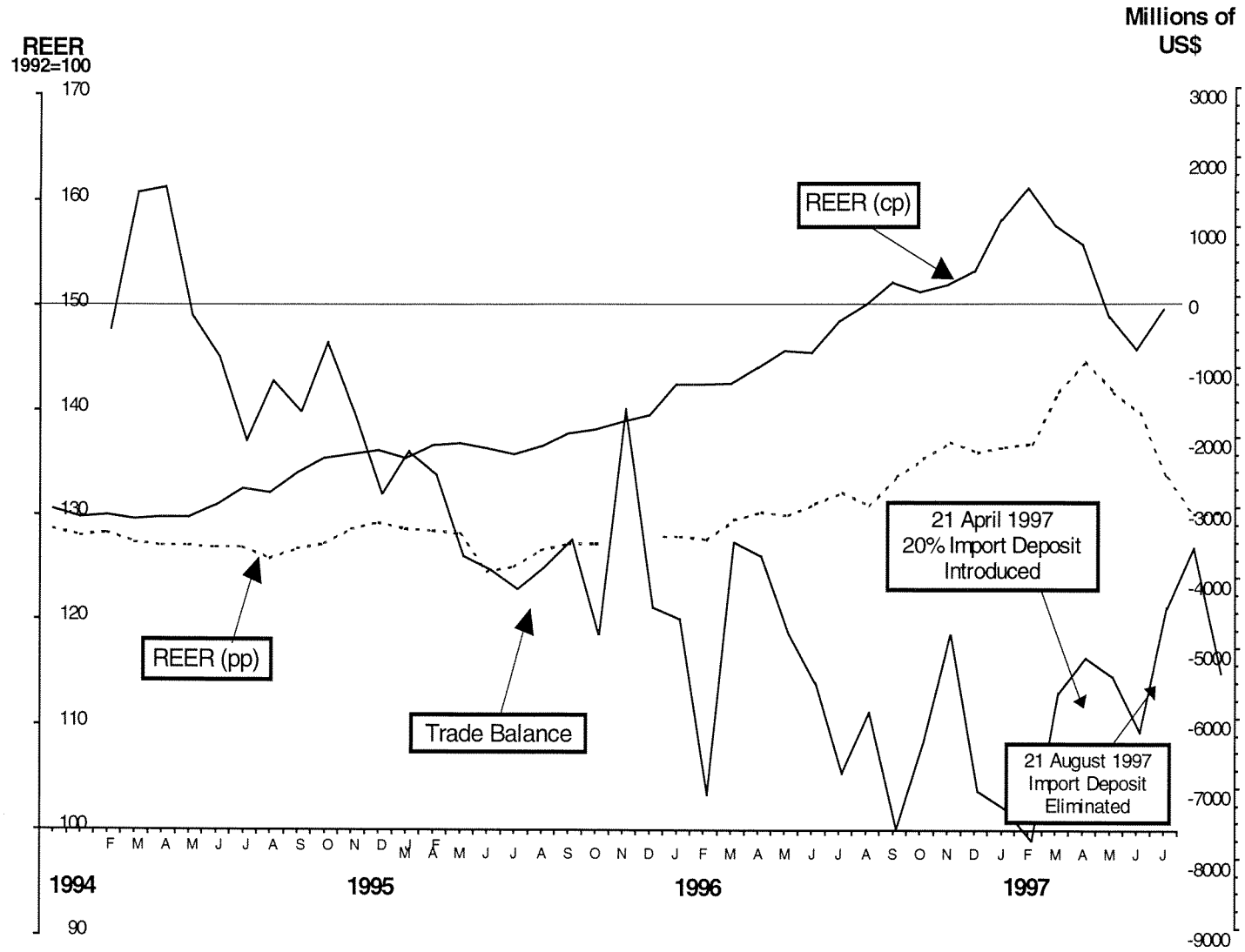

Figure 1: Czech Real Exchange Rates and Trade Balance, 1992-1997

Sources: Drabek and Brada(1998) and Czech National Bank, *Monthly Bulletin,* 1997, No. 9.

Figure 2: Czech Nominal Exchange Rate, 1993-1998

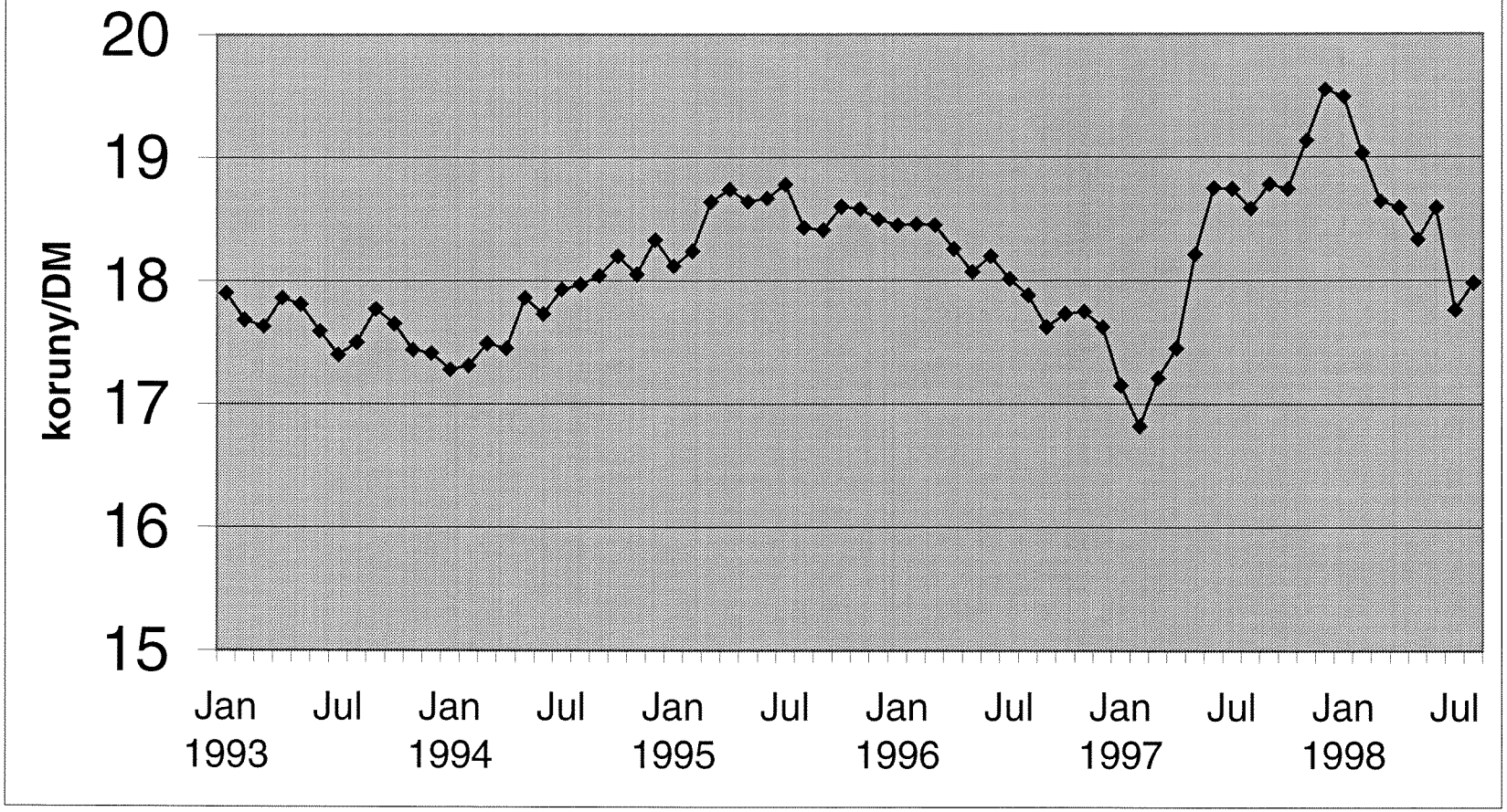

Figure 3 Czech Monthly Wages in Industry, 1993-1998 (koruny)